

LURUS MINOS, THE FIRST SPECIES OF LURIDAE
(TURBELLARIA: RHABDOCOELA) FROM THE
OLD WORLD

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Abstract. — *Lurus minos*, a new species of the recently erected statocyst-bearing family Luridae, was found in subtidal fine sand off the island of Crete (eastern Mediterranean). Of the four previously known species in the genus, three occur in the western Atlantic (Brazil and North Carolina) and one in Fiji. The new species differs in the sclerotized structures of the reproductive system, and seems most closely related to *L. tyndareus* from Fiji.

Described by Marcus (1950) as a new species and genus from the coast of Brazil, the microturbellarian *Lurus evelinae* has characteristics typical of Dalyellioida-Provorticidae but in addition possesses a statocyst, a structure not otherwise present in the Dalyellioida nor any other members of the order Rhabdocoela. On the basis of the discovery of three further species of *Lurus* (*L. castor*, *L. pollux* and *L. tyndareus*), Sterrer & Rieger (1990) erected the family Luridae to reflect this unusual combination of characters. Reinhard Rieger (pers. comm.) provided preliminary data on statocyst ultrastructure in *Lurus*; these suggest that, in spite of superficial similarities with Catenuvida-Retronectidae (Sterrer & Rieger 1974) such as statolith size, shape, number and variability, the lurid statocyst is a large intracellular vacuole within a modified gut cell, and thus not homologous with the statocyst of any other turbellarian (cf. Ehlers 1985). The genus *Lurus*, therefore, continues to be of special interest for the study of platyhelminth phylogeny.

During a brief collecting trip to Crete in the summer of 1991, I found specimens belonging to a fifth species in this genus, the first to be reported from the shores of the Old World. Samples were collected by snorkeling over the shallow bottom and scooping sand into a bucket. Specimen extraction,

documentation and analysis follow Sterrer (1971). This description is based on observation of live animals only. Wholemounds of squeezed specimens were preserved with formalin-glycerol and sealed with Eukitt.

Lurus minos, new species
Fig. 1A–H

Etymology. — After King Minos, the legendary ruler of bronze-age Crete.

Holotype. — Wholemound of one adult specimen in squeeze preparation, deposited with the Swedish Museum of Natural History in Stockholm (SMNH Type Coll. 4379).

Paratypes. — Wholemounds of 2 adult specimens in squeeze preparation, deposited with the US National Museum of Natural History (USNM 149923, 149924).

Type locality. — Crete (Eastern Mediterranean), Messaras Bay, beach W of Phai-tós; very fine sand with ripple marks in 2–4 m depth, 10–100 m from shore; coll. 14 Sep 1991, 7 specimens.

Other localities. — Crete, south shore, beach E of Lerápetra; fine, clean sand with ripple marks in 0.5–3 m depth, 5–100 m from shore; coll. 15 Sep 1991, 1 specimen. North shore, inner harbor of Pánormos; fine sand with detritus in 1.5 m depth; coll. 18 Sep 1991, 1 specimen.

Diagnosis. — *Lurus* with single testis and

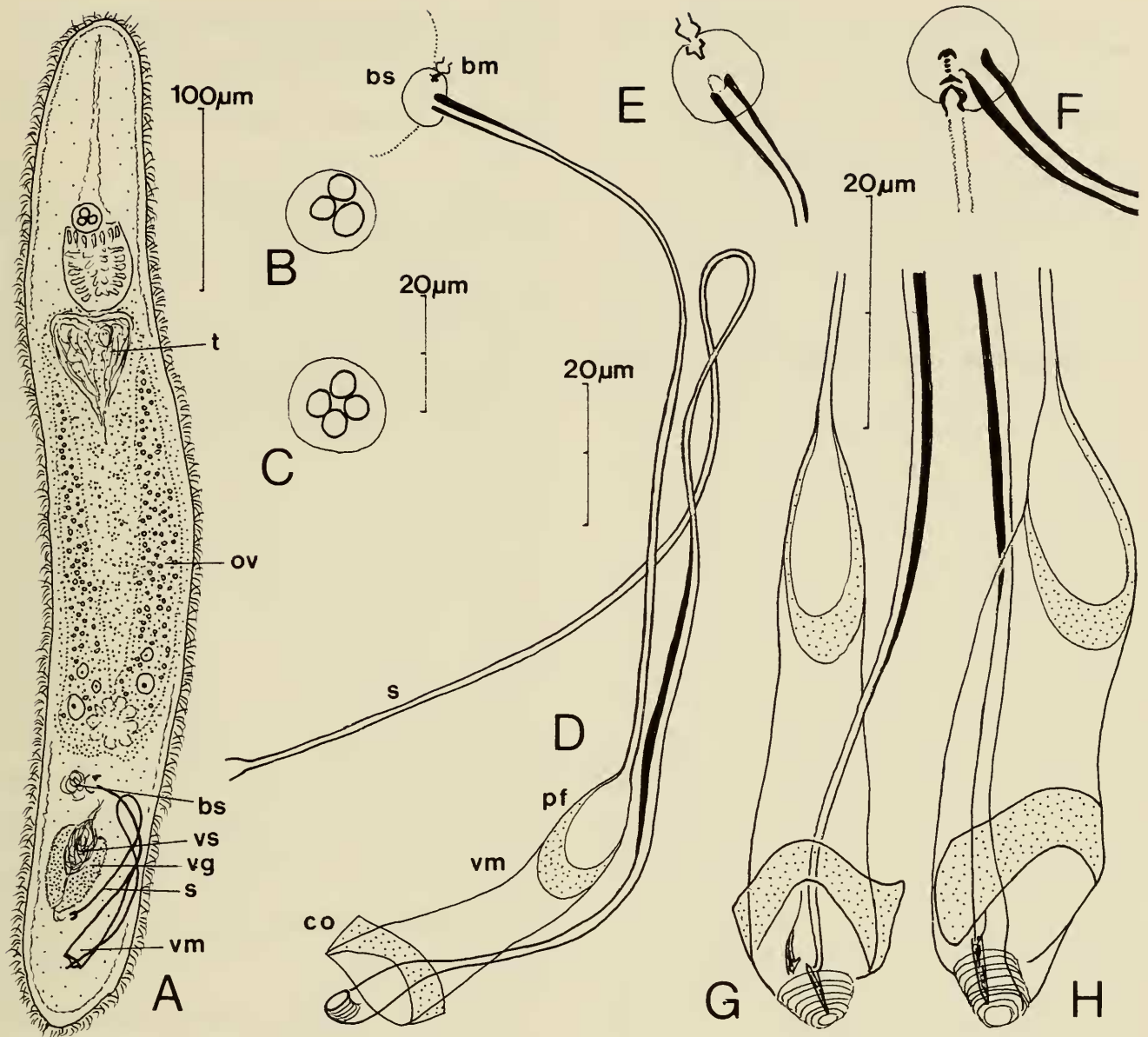


Fig. 1. *Lurus minos*. A, Habitus of adult; B and C, Statocyst of two specimens; D, Sclerotized parts of reproductive system; E and F, Proximal end of vagina mouthpiece with bursa mouthpiece of two specimens; G and H, Distal end of vagina mouthpiece and male copulatory stylet of two specimens. The scales apply to A, B-C, D, and E-H, respectively. Abbreviations: bm bursa mouthpiece, bs bursa, co collar of vagina mouthpiece, ov ovary, pf perforation of vagina mouthpiece, s male copulatory stylet, t testis, vg vesicula granulorum, vm vagina mouthpiece, vs seminal vesicle.

vas deferens. Copulatory stylet is a once-folded, $2\ \mu\text{m}$ wide tube with a total length of $240\ \mu\text{m}$. Vagina mouthpiece is a slightly curved, $1\text{--}2\ \mu\text{m}$ wide tube of $180\ \mu\text{m}$ length, distally flared into a $50\ \mu\text{m}$ long funnel with a collar. Bursa mouthpiece $5\ \mu\text{m}$ long, delicate, attached to proximal end of vagina mouthpiece.

Description.—Organization and behavior: Colorless; the rostral third of body usually translucent, the rest opaque. Rather fu-

siform when swimming (Fig. 1A), more barrel-shaped when resting. Mature specimens are $275\text{--}500\ \mu\text{m}$ long and $75\text{--}80\ \mu\text{m}$ wide; the only juvenile measured $400\ \mu\text{m}$ by $80\ \mu\text{m}$. As the animal swims it moves its head from side to side in a steady pendulum motion that seems characteristic for the genus.

Nervous and sensory system: A statocyst (Fig. 1B, C) was present in all specimens. It is located above the anterior part of the

pharynx, spherical, 15 μm in diameter, and contains 3 or 4 more or less spherical statoliths of 5–7 μm diameter. Of the 9 specimens encountered, 7 contained 3 statoliths, and 2 contained 4, which gives a mean statolith number of 3.22 for the sample.

Reproductive system—male organs: There is a single, conical testis (Fig. 1A; t) located immediately behind and below the pharynx; a vas deferens was not seen but the shape of the testis suggests it is single as well. The bulbous seminal vesicle (vs) is surrounded by a finely granular vesicula granulorum (vg); it empties caudally into a male stylet (s). Proximally somewhat distended to form a narrow funnel, the male stylet (Fig. 1D; s) is a long, apparently flexible tube of about 2 μm diameter that first extends rostrally for about 100 μm , then makes a 180° turn to extend caudally for about 130 μm to join the vagina mouthpiece (vm) at the common genital opening (Fig. 1G, H). In a 50 μm long portion of this distal half the male stylet wall is thickened on one side. The total length of the male stylet is about 240 μm .

Female organs (Fig. 1A): The female gonads (ov) are paired, being vitellaria in the larger anterior part, and germaria (with large oocyte nuclei) in the posterior. The vagina mouthpiece (vm) is a 180 μm long tube, 1–2 μm wide, that runs from the bursa (bs) to the genital opening. Distally the vagina mouthpiece forms a 50 μm long and 18 μm wide funnel whose opening is bordered by a 5 μm wide collar (co). The narrow part of the funnel looked as if it had a large, oblong lateral perforation (pf). The male stylet makes contact with the funnel just below the collar, which it apparently traverses, and emerges beyond the rim of the vagina mouthpiece as a prominent papilla made up of concentric rings (Fig. 1G, H). Proximally, the vagina mouthpiece flares into a shallow saucer, to the rim of which a third sclerotized structure is attached, the bursa mouthpiece (Fig. 1D; bm). Difficult to resolve, the

bursa mouthpiece looks somewhat like a roll of coins topped by a cup, all of which are presumably pierced by a central canal through which sperm pass to the oocyte (Fig. 1E, F).

Discussion.—Within the genus *Lurus*, to which it clearly belongs, *L. minos* is most closely associated with the three recently described species (*L. castor*, *L. pollux* and *L. tyndareus*) by the possession of only one testis, and the close proximity of vesicula seminalis and vesicula granulorum (in contrast to *L. evelinae* for which paired testes as well as separate vesiculae have been described). The sclerotized parts of the reproductive system are most similar to those of *L. tyndareus* and *L. castor*. In both species the joint terminal opening of male stylet and vagina mouthpiece are urn- or funnel-shaped, with a distinct collar and with concentric rings in *L. castor*, and with the male stylet terminating in a papilla in *L. tyndareus*. In the latter, as in *L. minos*, the male stylet has one 180° turn (rather than being spiralized as in *L. castor*). The bursa mouthpiece of *L. minos*, furthermore, is far from being as robust as in *L. castor* and, to a lesser degree, *L. pollux*, but almost as delicate as that of *L. tyndareus*.

The statocyst of *L. minos* confirms not only the remarkable variability in statolith numbers known from other members of the genus (from 2 to 5) but also the mean statolith number which, in all populations that have so far been analyzed, is always somewhat above 3 (3.22 in *L. minos*, 3.11 in *L. castor*, 3.54 in *L. pollux*, and 3.40 in *L. tyndareus*). Only *L. evelinae* is reported to have 2 statoliths, but Marcus' (1950) description is based almost exclusively on preserved and sectioned specimens which may not have revealed such variability.

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